(ii) a pressure source in fluid communication with the mixing channel, which pressure source introduces one or more samples into the mixing channel by applying pressure to the mixing channel; and,

(iii) an electrokinetic controller in fluid communication with the separation channel, which electrokinetic controller transports the one or more samples into the separation channel by applying a voltage to the separation channel.

B1 Cont

2. (Amended) The microfluidic device of claim 1, wherein the mixing channel has a depth and a width, which depth is between about 5 μm and about 100 μm and which width is between about 5 μm and about 100 μm.

6. (Amended) The microfluidic device of claim 1, wherein the separation channel has a depth and a width, which depth is between about 1 μm and about 20 μm and which width is between about 1 μm and about 20 μm.

B2

10. (Amended) The device of claim 1, wherein the mixing channel has a first depth and the separation channel has a second depth, which first depth is at least about 2 times as as the second depth.

11. (Amended) The device of claim 1, wherein the mixing channel has a first depth and the separation channel has a second depth, which first depth is at least about 5 times as as the second depth.

B3

12. (Amended) The device of claim 1, wherein the mixing channel has a first depth and the separation channel has a second depth, which first depth is at least about 10 times as as the second depth.

13. (Amended) The device of claim 1, wherein the mixing channel has a first width and the separation channel has a second width, which first width is at least about 2 times as wide as the second width.

14. (Amended) The device of claim 1, wherein the mixing channel has a first width and the separation channel has a second width, which first width is at least about 4 to about 5 times as wide as the second width.

15. (Amended) The device of claim 1, wherein the mixing channel has a first width and the separation channel has a second width, which first width is at least about 10 times as wide as the second width.

B3 Cont

16. (Amended) The microfluidic device of claim 1, wherein the separation channel comprises a separation matrix.

18. (Amended) The microfluidic device of claim 1, further comprising a loading channel fluidly coupled to the mixing channel and intersecting the separation channel.

B4

19. (Amended) The microfluidic device of claim 18, wherein the loading channel has a depth and a width, which depth is between about 1 μm and about 20 μm and which width is between about 1 μm and about 20 μm.

25. (Amended) The microfluidic device of claim 1, wherein the pressure source comprises an electroosmotic pump fluidly coupled to the mixing channel.

B5

27. (Amended) The microfluidic device of claim 25, wherein the electroosmotic pump draws a sample into the mixing channel and the electrokinetic controller injects the sample from the mixing channel into the separation channel.

B6

28. (Amended) The microfluidic device of claim 1, the device further comprising a loading channel, wherein the electrokinetic controller electrokinetically loads the sample into the loading channel from the mixing channel and electrokinetically injects the sample into the separation channel from the loading channel.

END OF AMENDMENTS